# Appendix I – Performance Measures (Detail)

## Details on DOT Measures of Safety

### Highway fatality and injury rates — Page 12

| Measure: | Rate of highway-related fatalities per 100 million vehicle-miles-traveled (VMT) |
|---|---|
| Scope: | Number of fatalities come from Fatality Analysis Reporting System (FARS) data, a census of fatal traffic crashes within the 50 states, D.C. and Puerto Rico. To be included in FARS, a crash must result in the death of an occupant of a vehicle or a non-motorist within 30 days of the crash. FARS data is a 100% count of fatal crashes collected from police crash reports, and other state data. FARS data cover all roadways open to the public, using the National Highways System classification of roads. Pedestrian and bicycle fatalities that occur on public highways but do not involve a motor vehicle are not recorded in FARS; however, this is a small number of fatalities. Vehicle Miles of Travel (VMT) data is derived by FHWA from state reported estimates of travel based on various levels of sampling dependent on road type. |
| Source: | NHTSA's Fatality Analysis Reporting System (FARS) for fatality data. FHWA's VMT data provided by its Highway Performance Monitoring System (HPMS). Information is transmitted to NHTSA and entered into the system after undergoing data review by NHTSA |
| Baseline: | Baseline is 1.7 in 1996. |
| Limitations: | VMT data is subject to estimating differences in the states, even though FHWA works to minimize such differences and differing projections on growth, population, and economic conditions which impact driving behavior. |
| Verification & Validation | Data reviewed and analyzed by NHTSA's National Center for Statistics and Analysis. Quality control procedures are built into annual data collection at 6 and 9 months, and at the year's end. A study was completed in 1993, looking at samples of FARS cases in 1989-90 to assess the accuracy of data being reported. VMT data is reviewed by FHWA for consistency and reasonableness. |
| Comment: | Data has been around many years and is generally accepted for describing safety on the Nation's highways. Adjusting raw highway fatalities and injuries by VMT provides a means of portraying the changes in highway fatalities on a constant exposure basis – to facilitate comparisons year-to-year. |

### Highway fatality and injury rates — Page 12

| Measure: | Rate of highway-related injuries per 100 million vehicle-miles-traveled (VMT) |
|---|---|
| Scope: | Injury data is derived from General Estimates System (GES), a nationally representative probability sample that makes national estimates of total nonfatal injury crashes, injured persons, and property damage only crashes. GES data cover all roadways open to the public, using the National Highways System classification of roads. Vehicle Miles of Travel (VMT) data is derived by FHWA from state reported estimates of travel based on various levels of sampling dependent on road type. |
| Source: | NHTSA's General Estimates System (GES) for injury. FHWA's VMT data provided by its Highway Performance Monitoring System |
| Baseline: | Baseline is 141 in 1996. |
| Limitations: | GES data is obtained from a nationally representative sample of 60 sites. The results provide only national data, not state by state data. VMT data is subject to estimating differences in the states, even though FHWA works to minimize such differences and differing projections on growth, population, and economic conditions which impact driving behavior. |
| Verification | Data reviewed and analyzed by NHTSA's National Center for Statistics and Analysis. Quality |

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|---|---|
| & Validation | control procedures are built into annual data collection at 6 and 9 months, and at the year's end. VMT data is reviewed by FHWA for consistency and reasonableness. |
| Comment: | Data has been around many years and is generally accepted for describing safety on the Nation's highways. GES records injury severity in four classes: incapacitating injury, evident injury but not incapacitating, possible but not visible injury, and injury of unknown severity. Adjusting raw highway fatalities and injuries by VMT provides a means of portraying the changes in highway fatalities on a constant exposure basis – to facilitate comparisons year-to-year. |

## Alcohol related highway fatalities **Page 13**

| **Measure:** | **Percentage of highway fatalities that are alcohol related** |
|---|---|
| Scope: | Fatality Analysis Reporting System (FARS) data is a census of fatal crashes within the 50 states, D.C. and Puerto Rico. FARS data cover all roadways open to the public, using the National Highways System classification of roads. To be included in FARS, a crash must result in the death of an occupant of a vehicle or a non-motorist within 30 days of the crash. A fatal crash is alcohol-related if either a driver or a non-motorist (such as a pedestrian) had a measurable or estimated blood alcohol concentration (BAC) of 0.01 grams per deciliter or above. |
| Source: | NHTSA's Fatality Analysis Reporting System (FARS). |
| Baseline: | Baseline is 40.9% in CY 1996. |
| Limitations: | Blood Alcohol Concentration (BAC) test results are not available for all drivers and non-occupants involved in fatal crashes. Missing data can result for a number of reasons; the most frequent of which is that persons are not always tested for alcohol. To address the missing data issue, NHTSA has developed and employed a statistical model to estimate the likelihood that a fatal crash-involved a driver who was sober (BAC of zero), had some alcohol (BAC of 0.01-0.09), or was intoxicated (BAC of 0.10 or greater) at the time of the crash. The statistical model (applied since 1982) is based on important characteristics of the crash including crash factors, vehicle factors, and person factors. While this measure does not link alcohol with fault in fatal crashes, the more comprehensive scope of the measure avoids a possible undercount of the size of the alcohol impaired driving problem. |
| Verification & Validation | Data reviewed and analyzed by NHTSA's National Center for Statistics and Analysis. Quality control procedures are built into annual data collection at 6 and 9 months, and at the year's end. In 1988, an independent panel of academics reviewed and commented on the statistical methods used in measuring alcohol-related highway fatalities. This report supported the approach currently in use. |
| Comment: | Data has been around many years and is generally accepted for describing safety on the Nation's highways. In 2000, this performance measure was revised to reflect the percentage of highway fatalities that are alcohol related. NHTSA believes that percentage targets are better annual measures because they factor in the overall traffic fatality number and can be predicted with greater precision than total numbers of alcohol-related fatalities. |

## Seat belt use **Page 14**

| **Measure:** | **Percent of Front Seat Occupants Using Seat Belts.** |
|---|---|
| Scope: | Surveys of belt usage by the 50 states and District of Columbia. All observe belt use in passenger cars. 33 states include light trucks, and 24 states include vans. |
| Source: | State data collected by observational surveys. |
| Baseline: | Baseline is 69 percent in CY 1997. |
| Limitations: | National belt use rates are calculated from each state's most recent survey, summing the weighted survey estimate by weighting the state's population to the total US population. State surveys differ in design, with 29 conducting probability-based surveys and the rest based on general observation. |

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| Verification & Validation | NHTSA works with the states to improve belt usage survey techniques and assesses the data for calculation of the national belt use rate. NHTSA also conducts the National Occupant Protection Use Survey (NOPUS) biennially. NOPUS provides a probability-based sample of national use with the ability to estimate sampling variability. NOPUS estimates for passenger car drivers and passengers provide a rough cross check of the data. In 1996, the state-based estimates fell within the 95 percent confidence interval of the NOPUS estimate. |
| Comment: | |

## Large truck-related fatality and injury rates **Page 15**

| **Measure:** | **Rate of large truck-related fatalities per 100 million truck vehicle-miles-traveled (Truck VMT)** |
|---|---|
| Scope: | *The measure includes all fatalities (passenger car, motorcycle, pedestrian, etc.) associated with crashes involving trucks with a gross vehicle weight rating of 10,000 pounds or more.* Number of fatalities come from Fatality Analysis Reporting System (FARS) data, a census of fatal traffic crashes within the 50 states, D.C. and Puerto Rico. See page I-1 for more information on FARS. Truck Vehicle Miles of Travel (Truck VMT) data are derived by FHWA from state reported estimates of truck travel based on various levels of sampling dependent on road type. |
| Source: | NHTSA's Fatality Analysis Reporting System (FARS) provides fatality data. FHWA's Truck VMT data is provided by the Highway Performance Monitoring System (HPMS). |
| Baseline: | Baseline is 2.8 in 1996. |
| Limitations: | FARS data elements are modified from year to year to respond to emphasis areas, vehicle fleet changes, and other needs for improvement. Truck VMT data are subject to estimating differences in the states, even though FHWA works to minimize such differences. This measure is normalized to Truck VMT in order to assist program managers in assessing truck safety. It does not provide a measure of the risk exposure faced by passenger cars. *It can not be compared to the overall highway fatality rate, which is normalized to all highway VMT.* |
| Verification & Validation | Fatality data reviewed and analyzed by NHTSA's National Center for Statistics and Analysis. Quality control procedures are built into annual data collection at 6 and 9 months, and at the year's end. A study was completed in 1993, looking at samples of FARS cases in 1989-90 to assess the accuracy of data being reported. Truck VMT data is reviewed by FHWA for consistency and reasonableness. |
| Comment: | Data has been around many years and is generally accepted for describing truck safety on the Nation's highways. Adjusting raw truck-related highway fatalities by Truck VMT provides a means of portraying the changes in highway fatalities on a constant exposure basis – to facilitate comparisons year-to-year within the Motor Carriers safety program. |

## Large truck-related fatality and injury rates **Page 15**

| **Measure:** | **Rate of large truck-related injuries per 100 million truck vehicle-miles-traveled (Truck VMT)** |
|---|---|
| Scope: | *The measure includes all injuries (passenger car, motorcycle, pedestrian, etc.) associated with crashes involving trucks with a gross vehicle weight rating of 10,000 pounds or more.* Injury data is derived from General Estimates System (GES). See page I-1 for more information on GES. Truck Vehicle Miles of Travel (Truck VMT) data is derived by FHWA from state reported estimates of truck travel based on various levels of sampling dependent on road type. |
| Source: | NHTSA's General Estimates System (GES) provides injury data. FHWA's Truck VMT data are provided by the Highway Performance Monitoring System (HPMS). |
| Baseline: | Baseline is 71.2 in 1996. |

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| Limitations: | GES data is obtained from a nationally representative sample of 60 sites. The results provide only national data, not state by state data. Truck VMT data are subject to estimating differences in the states, even though FHWA works to minimize such differences. This measure is normalized to Truck VMT in order to assist program managers in assessing truck safety. It does not provide a measure of the risk exposure faced by passenger cars. *It can not be compared to the overall highway injury rate, which is normalized to all highway VMT.* |
| Verification & Validation | Injury data reviewed and analyzed by NHTSA's National Center for Statistics and Analysis. Quality control procedures are built into annual data collection at 6 and 9 months, and at the year's end. Truck VMT data is reviewed by FHWA for consistency and reasonableness. |
| Comment: | Data has been around many years and is generally accepted for describing safety on the Nation's highways. GES records injury severity in four classes: incapacitating injury, evident injury but not incapacitating, possible but not visible injury, and injury of unknown severity. Adjusting raw truck-related highway fatalities by Truck VMT provides a means of portraying the changes in highway fatalities on a constant exposure basis – to facilitate comparisons year-to-year within the Motor Carriers safety program. |

## Air carrier fatal accident rate **Page 16**

| **Measure:** | **Number of fatal accidents per 100,000 flight hours.** |
|---|---|
| Scope: | This measure includes both scheduled and nonscheduled flights of large U.S. air carriers (FAR Part 121) and scheduled flights of commuter airlines (FAR Part 135). It excludes on-demand (i.e., air taxi) service and general aviation. |
| Source: | Part 121 and Part 135 flight hour data is submitted to BTS under FAR Parts 241 and 298, respectively. NTSB provides accident data. |
| Baseline: | The average of all FAR Parts 121 and 135 fatal accident rates for the three years from 1994 through 1996 is 0.037 per 100,000 flight hours. |
| Limitations: | The fatal accident rate in these categories is small and could significantly fluctuate from year to year due to the occurrence or non-occurrence of a single accident. Use of an average over a number of baseline years smoothes the fluctuation. |
| Verification & Validation | The FAA does comparison checking of the flight hours reported to BTS with hours reported on the Air Carrier Utilization Reports. NTSB and FAA's Office of Accident Investigation meet regularly to validate the accident count. |
| Comment: | This goal assumes a 15 % reduction in fatal accidents in the five areas covered by *Safer Skies – A Focused Agenda.* These areas are: controlled flight into terrain, loss of control, uncontained engine failure, approach and landing, and weather. The sixth area in *Safer Skies*, runway incursions, is the subject of a separate performance goal. These causal factors accounted for 14 of the 18 total fatal accidents in the baseline years 1994 through 1996. The net reduction – about 12% -- reflects a 15% reduction in areas that cover about 78% of the accidents. |

## General aviation fatal accident rate **Page 17**

| **Measure:** | **Number of fatal accidents per 100,000 hours flown** |
|---|---|
| Scope: | The goal includes on-demand (non-scheduled FAR Part 135) and general aviation. General aviation comprises a diverse range of aviation activities. The range of general aviation aircraft include single-seat homebuilt aircraft, rotorcraft, balloons, single and multiple engine land and sea airplanes including highly sophisticated extended range turbojets. |

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| Source: | General aviation flight hours are projected based on responses to a voluntary annual general aviation and air taxi survey. This survey is conducted by the FAA's Office of Policy and Plans. NTSB provides the accident data. |
| Baseline: | Under development by FAA and the General Aviation Community. |
| Limitations: | Since general aviation flight hours are based on a survey, the accuracy is less than that for the commercial air carriers; however, the biases in data should be reasonably consistent from year to year. The lag time for data is several months. For example, the general aviation and air taxi survey data for 1996 was not published until Fiscal Year 1998. |
| Verification & Validation | NTSB and FAA's Office of Accident Investigation meet regularly to validate the information on the number of accidents. There is no readily available way to verify or validate general aviation flight hours since the annual survey is the only source of information. A comparison with prior years' data is used to identify possible problems. |
| Comment: | Specific baseline and reduction targets are being developed cooperatively with the general aviation community. The expected completion date is June 1999. |

## Runway incursions **Page 18**

| **Measure:** | **Number of runway incursions.** |
|---|---|
| Scope: | Incursions occur as a result of surface operational errors, surface pilot deviations, or vehicle/pedestrian deviations (VPDs). Incursions are reported for airports which have an air traffic control tower. |
| Source: | The air traffic controllers report the incursion, and the data is recorded in the FAA National Airspace Incident Monitoring System (NAIMS) |
| Baseline: | Baseline is 318 incursions in 1997. |
| Limitations: | There is some delay in finalizing investigation reports because incursions need to be validated by a review board. Validation can lead to slight changes between preliminary and final numbers. Actual data are available from 1991 and following years. |
| Verification & Validation | Determination of whether or not a runway incursion has occurred is made by a review board conducted monthly. The board is comprised of staff from the Offices of Air Traffic Services, Flight Standards, Airports, Aviation Safety, and the Runway Safety Program Office. |
| Comment: | |

## Operational Errors and Deviations (Air Traffic) **Page 19**

| **Measure:** | **Operational errors and deviations per 100,000 facility activities.** |
|---|---|
| Scope: | An error occurs when separation between aircraft is less then the separation determined necessary for the specific phase of flight. An operational deviation occurs when an aircraft enters airspace without prior coordination. "Activities" are total facility activities, as defined in *Aviation System Indicators 1997 Annual Report.* Total facility activities are the sum of en route and terminal facility activities. This measure tracks operational errors and deviations resulting from air traffic control actions. |
| Source: | FAA air traffic facilities have software that detects operational errors and report them to facility management. Controllers report operational deviations. The information is summarized in the FAA Air Traffic Operational Error and Deviation Database. |
| Baseline: | Baselines are 0.54 errors and 0.11 deviations per 100,000 facility activities in 1994. |
| Limitations: | There is a few months lag in reporting data because of the need to investigate significant incidents. The severity of errors is not measured. Minor errors such as 4 and ½ mile rather than 5 mile |

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| | separation are counted the same as more serious errors. Data are available for 1994 and following years. |
| Verification & Validation | FAA performs system checks and counts daily against reported data to ensure the accuracy of information reported. |
| Comment: | An automated reporting system is being developed. |

## Recreational boating fatalities — Page 20

| Measure: | Number of fatalities |
|---|---|
| Scope: | Measure includes all accidental deaths involving the use or operation of recreational boats. It does not include suicides or homicides. |
| Source: | Coast Guard Boating Accident Report database. States collect data from boat owners and operators in the form of Boating Accident Reports, as instructed in 33 CFR 173c. |
| Baseline: | Baseline is 805 fatalities in 1997. |
| Limitations: | Fatality data is derived from reports by the public, but with accompanying state investigation reports is considered reliable for fatalities. There may be a small number of fatalities that escape state collection efforts. Also, states may not collect or categorize fatalities in exactly the same manner. |
| Verification & Validation | Data in Coast Guard database is validated by program managers; at the end of the calendar year, the USCG compiles statistics from the states' fatality data and sends a report to each state for confirmation. State boating officials validate the numbers in the report and provide additional data, if needed, to reconcile any data discrepancies. |
| Comment: | Data are not normalized for increases or decreases in the number or usage of boats, which tend to limit data use in making comparisons over time. |

## Maritime search and rescue — Page 21

| Measure: | Lives saved as a percent of total mariners in imminent danger. |
|---|---|
| Scope: | The measure includes all people onboard a vessel that is reported in distress or in urgent need of assistance to the Coast Guard. The Coast Guard makes a determination on scene whether there is imminent danger, based upon the condition of the vessel, the people onboard, and the environmental conditions. Fatalities that occur prior to notification of the Coast Guard are not counted. |
| Source: | Internal – CG Search and Rescue Management Information System (SARMIS). |
| Baseline: | The goal is a performance standard, not based on a specific, historical baseline year. |
| Limitations: | There is some judgment involved in assessing whether mariners are in distress, and the number may be over-reported (thus over-counting the number of lives saved). However, there is likely to be consistency in reporting across years, so the measure provides a good sense of changes over time. Historical data (1994 in particular) may be skewed upward by a surge of migrants interdicted and rescued at sea. Current reporting no longer includes migrants interdicted; they are counted directly as migrants interdicted. |
| Verification & Validation | CG Program Managers annually validate the data in the internal source, SARMIS, which contains error checks to ensure accurate data entry. Entries are reviewed at Coast Guard District offices as first step in validation – errors and inconsistencies are identified and corrected. Finally Coast Guard headquarters program managers review compiled data annually to assess consistency with historic variance and trends. This review includes: curvilinear regression analysis to compare current data to historic data, and a program review analysis to identify and resolve aberrations. |
| Comment: | |

## Passenger Vessel Safety — Page 22

| **Measure:** | **Number of high-risk passenger vessel casualties per 1000 vessels.** |
|---|---|
| Scope: | All commercial passenger vessels carrying 6 or more passengers for hire operating in U.S. navigable waters are included, as well as U.S. passenger vessels operating in any waters. High-risk accidents include fire, capsizing, flooding, collision, grounding, or sinking. |
| Source: | Accidents are reported to the Coast Guard by vessel operators. Data are recorded in the Coast Guard Marine Safety Information System. The total number of passenger vessels (denominator) is a count of all inspected passenger vessels, and an estimate of uninspected passenger vessels. |
| Baseline: | The baseline is established by a regression curve obtained from several years of data. The 1996 rate was 48 per 1000 vessels. |
| Limitations: | The measure is an indirect indicator of the risk of major loss of life, and serves as a leading indicator of passenger vessel safety. Since there are so few accidents involving multiple loss of life, a direct measure is not a useful gauge of underlying risk. |
| Verification & Validation | Fatality data from the Coast Guard Marine Safety Information System is validated by program managers, who identify an d investigate errors and inconsistencies. |
| Comment: | The data trend for this measure is not moving toward the goal level. This could be caused by either an actual trend in the industry, or by increased reporting of incidents that were previously unreported. |

## Rail crash and fatality rates — Page 23

| **Measure:** | **Total rail-related fatalities and train accidents, each divided by total train-miles in millions.** |
|---|---|
| Scope: | The fatality measure includes anyone on rail property, any on-duty railroad employee, and anyone killed by a train or its contents. It does not include fatalities on trains or rail lines that do not connect to the national rail network, such as certain recreational railroads or mass transit operations. |
| Source: | *Railroad Safety Statistics - Annual Report.* Statistical data, tables, and charts depict the causes and nature of rail-related fatalities and accidents. Data on fatalities, accidents, and train miles are reported to FRA by railroad companies. |
| Baseline: | Baselines are 1.71 fatalities and 3.91 crashes per million train-miles in 1995. |
| Limitations: | Because of the scope of the reporting criteria, some fatalities that are counted are not associated directly with operation of the trains, and some railroad fatalities are not counted. This scope is consistent with the regulatory authority of the agency, but not consistent with other modes of transportation, for comparative purposes. |
| Verification & Validation | Railroads are required by law to submit accident/incident reports monthly to FRA. They are also required to update any inaccurate or incomplete information. FRA conducts routine data audits (records inspections) to verify the adequacy of railroad reporting and recordkeeping requirements. |
| Comment: | |

## Rail grade-crossing crash rate — Page 24

| **Measure:** | **Total highway-rail grade crossing collisions divided by the product of {annual train-miles (millions) times annual vehicle-miles-traveled (trillions)}.** |
|---|---|
| Scope: | Includes all collisions with vehicles at public and private rail grade crossings, but not trespasser accidents. |

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| Source: | Collisions and train-miles are reported in FRA=s *Railroad Safety Statistics - Annual Report.* Vehicle-miles-traveled (VMT) are obtained from the FHWA Office of Highway Information Management. |
| Baseline: | Baseline is 2.85 in 1995. |
| Limitations: | Because the denominator includes all highway vehicle-miles-traveled (VMT), and not just VMT that are exposed to grade crossings, the rate portrayed may be lower than the actual risk. |
| Verification & Validation | FRA=s Office of Safety has a review process to ensure that railroads and the States comply with Federal reporting requirements in the preparation of the FRA *Railroad Safety Statistics - Annual Report*. |
| Comment: | The measure is a ratio of total highway-rail grade crossing collisions, total-train miles, and total highway vehicle-miles-traveled. The graph reflects the projected trend necessary to meet FRA's out-year goal of a 2.08 rate in 2002. |

## Rail trespasser fatality rate — Page 25

| **Measure:** | **Total number of trespasser fatalities (excluding grade crossings), divided by the product of {total train miles (millions) times the US population (billions)}.** |
|---|---|
| Scope: | Trespassers are persons who are on that part of railroad property used in railroad operations and whose presence is prohibited, forbidden or unlawful. |
| Source: | Trespasser fatalities are reported in FRA=s *Railroad Safety Statistics - Annual Report* using data submitted by railroads to FRA=s Office of Safety. The U.S. population data are from the U.S. Bureau of the Census. |
| Baseline: | Baseline is 2.81 in 1995. |
| Limitations: | The denominator reflects an attempt to capture changes in risk exposure associated with increasing train mileage, coupled with increasing population that may potentially trespass on railroad property. Because not all of the population is exposed to railroads, the rate portrayed may be lower than the actual risk. |
| Verification & Validation | Railroads are required by law to submit trespasser fatality reports monthly to FRA. They are also required to update any inaccurate or incomplete information. FRA conducts routine data audits (records inspections) to verify the adequacy of railroad reporting and recordkeeping requirements. |
| Comment: | |

## Transit fatality and injury rates — Page 26

| **Measure:** | **The number of fatalities (or injuries) per 100 million transit passenger miles.** |
|---|---|
| Scope: | The data include both riders and employees. A fatality is defined as a transit caused death from collision, personal casualty, fire, derailment, or bus going off the road. An injury is defined as any physical damage or harm to a person requiring medical treatment caused by a transit collision, personal casualty, fire, derailment, or bus going off the road. |
| Source: | FTA's Safety Management Information System (SAMIS), with data reported by transit operators to the National Transit Database (NTB). |
| Baseline: | Baselines are 0.52 fatalities and 127 injuries per 100 million passenger-miles-traveled in 1996. |
| Limitations: | Because of the scope of the reporting criteria, some fatalities that are counted are not associated directly with transit operation. This scope is consistent with the regulatory authority of the agency, but not consistent with other modes of transportation, for comparative purposes. |

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| Verification & Validation | An independent auditor and the transit agency's CEO certify that data reported to the NTD are accurate. Using data to from the NTD to compile the SAMIS data, the Transportation Systems Center compares current safety statistics with previous years, identifies questionable trends, and seeks explanation from operators. |
| Comment: | These data have changed since the DOT FY 1999 Performance Plan. This years measure more accurately tracks transit related fatalities and injuries, and excludes unrelated data. Because of this adjustment, the historical rates appear to be lower this year than last year. |

## Pipeline failures **Page 27**

| **Measure:** | **Number of natural gas transmission pipeline failures** |
|---|---|
| Scope: | This measure is based on reported hazardous natural gas leaks that meet federal reporting criteria as defined in 49 CFR 191.1 and 191.15 for natural gas incidents. |
| Source: | RSPA's Natural Gas Transmission Incident Report, and Natural Gas Distribution Incident Report. Failure reports are filed within 30 days of the occurrence of reportable incidents. Complete calendar year data are available by March 1 of the following year. Data may change as operators file supplemental reports. |
| Baseline: | Baselines are 4871 gas failures in 1997. |
| Limitations: | RSPA lacks adequate infrastructure information on pipeline operations and maintenance needed to fully characterize problems when they occur and lacks information on precursor conditions that contribute to incidents. Joint Federal, state and industry teams have been formed to devise a new course to improve information availability. |
| Verification & Validation | RSPA reviews/verifies data provided for accuracy and requests supplemental reports where shortcomings are indicated. |
| Comment: | Hazardous liquid pipeline failures are not included as a safety goal, as the primarily impact the environment. See page 68. |

## Hazardous Materials Incidents **Page 28**

| **Measure:** | **Number of serious hazardous material incidents** |
|---|---|
| Scope: | Serious reported incidents include those that result in fatalities, major injuries (for most purposes, an injury resulting in hospitalization), closure of major transportation artery or facility, evacuation of six or more persons, or a vehicle accident or derailment. Volume of spills is not tracked, as this does not necessarily indicate risk. |
| Source: | Hazardous Materials carriers report data to RSPA for entry into the Hazardous Materials Information System (HMIS). |
| Baseline: | Baseline is 464 serious incidents in 1996. |
| Limitations: | Data for all hazardous materials incidents is suspected of being incomplete due to under-reporting for minor incidents. Most reportable serious incidents are in the system, making this a more consistent measure for program management. However, it does not reflect all incidents. |
| Verification & Validation | RSPA verifies the data by periodic follow-up reviews of data entry by the manager of the Hazardous Materials Information System, and verification audits of the data entry process. RSPA crosswalks HMIS reports against the National Response Center log of accidents. RSPA is improving compliance with reporting requirements by correlating HMIS reports with FRA's Accident Report data and the HMIS telephonic data. RSPA plans to incorporate procedures to correlate HMIS reports with FHWA's Safetynet Accident File data. |

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| Comment: | The RSPA rulemaking extending the jurisdiction of the Hazmat regulations to include intrastate highway carriers, HM-200, will be fully implemented by FY 2000. The expected increase in the number of reported incidents will affect the performance measure, requiring a re-evaluation of the Department's goal. |

# Details on DOT Measures of Mobility

### Highway pavement condition — Page 31

| **Measure:** | **Percent of National Highway System that meet pavement performance standards for acceptable ride quality (International Roughness Index of less than or equal to 170 inches/mile).** |
|---|---|
| Scope: | IRI is compiled annually for every section of the NHS, using data reported from the States. |
| Source: | Data collected by the State Highway Agencies and reported to FHWA for the Highway Performance Monitoring System (HPMS). They are obtained from calibrated measurement devices that meet industry set standards. Measurement procedures are included in the HPMS Field Manual. |
| Baseline: | The 1996 baseline is 90.4 percent. |
| Limitations: | IRI data for the approved NHS exist from 1995 onward. Past data (1993 and 1994) contain some variation as this data was on the proposed, rather than the existing NHS. No NHS IRI data are available prior to 1993. The HPMS requires States to report IRI data every two years; however, following the requirements is not mandated, but voluntary. |
| Verification & Validation | FHWA validates the data based on consistency reviews. FHWA field offices perform annual reviews of the IRI process, including equipment and calibration checks. |
| Comment: | None. |

### Highway bridge condition — Page 32

| **Measure:** | **Percent of bridges on the NHS that are deficient** |
|---|---|
| Scope: | Measure includes the number of deficient (structurally deficient and functionally obsolete) bridges on the NHS functional system divided by the total number of NHS bridges in the inventory, expressed as a percent. |
| Source: | Bridge information is collected by State DOTs and other bridge owners and provided to FHWA annually for inclusion in the FHWA maintained National Bridge Inventory (NBI). NBI contains data on 582,750 highway bridges. |
| Baseline: | The 1997 baseline is 23.4 percent. |
| Limitations: | Data is available from 1993 onward. NBI includes information on 582,750 bridges, including all 128,508 NHS bridges. It is the world's most comprehensive database of bridge information. States are required to update the system annually, but many States update quarterly. The system contains 95 data items for each of the bridges, and 20 of these items relate to bridge condition and appraisal. There are specific instructions as to how to assess bridges based on these items, including a grading scale from 0 to 9 with specific definitions and specific criteria to follow. This serves to reduce assessment subjectivity to a negligible level. |
| Verification & Validation | DOT evaluates accuracy and reliability of the submitted NBI information through data checks and field reviews by both Headquarter and field office personnel. This is done as a part of FHWA's NBI, the National Bridge Inventory System (NBIS), and Highway Bridge Replacement and Rehabilitation Program. Evaluation of the State's compliance with the NBIS most often includes a |

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| | sample of bridge inspection reports and a comparison of condition data with field visits to the bridge site. In addition, there is an edit update program that identifies potential data errors in the NBIS. |
| Comment: | None. |

## Highway congestion — Page 33

| **Measure:** | **Hours of delay/1000 vehicle miles traveled on Federal-aid highways.** |
|---|---|
| Scope: | Delay is calculated as the difference between estimated actual travel speed and free flow travel speed that could be attained if there were no other traffic. Delay includes weekday and weekend travel combined. Weighted design speed is used to represent free flow speed; travel speed is estimated from equations that relate free flow speed, traffic volume, and capacity. On other than freeways, delay also includes the delay due to traffic control devices – traffic lights and stop signs. Delay in hours per 1000 VMT is calculated on an individual section basis using the Highway Performance Monitoring System (HPMS) data and summed to represent an annual average delay for all Federal-aid highways. |
| Source: | Data collected and provided by the State departments of transportation from existing State or local government databases or transportation plans and programs, including those of Metropolitan Planning Organizations. |
| Baseline: | The 1996 baseline is 9.2 hours. |
| Limitations: | The delay calculation is modeled, based on traffic volume and capacity values such as number of through lanes, lane width, type of terrain, and at-grade intersections. Minor lengths of Federal-aid highways on the lowest functional systems are not included in this analysis. Although nearly all States' data are included in the trend estimates, they do not include all States for all years. The estimate understates delay since it does not include delay due to incidents – crashes, etc. The estimate includes delay caused by traffic control devices since they reduce operating speed below what would otherwise be the free flow speed. Data exist for 1993 and later years. |
| Verification & Validation | State-reported HPMS data are reviewed by FHWA for completeness, consistency, and adherence to reporting guidelines. Where necessary, and with close State cooperation, data may be adjusted to improve completeness, consistency, and uniformity. |
| Comment: | Nine hours of delay per 1,000 VMT could be equated to approximately 11 minutes of delay on 50 20-mile commuter trips in an urbanized area. In this example, the 11 minutes of delay easily could be the difference between the time it would take to travel the 20 miles at the posted speed with no stops and the time it would actually take during the height of the rush hour. |

## Intelligent Transportation Systems Integration — Page 34

| **Measure:** | **Number of Metropolitan Areas with Integrated Metropolitan ITS components.** |
|---|---|
| Scope: | ITS integration will be assessed in at least 75 large metropolitan areas. For this measure, integration means sharing data between the different jurisdictions responsible for ITS infrastructure. Typically there are three: State DOTs, responsible for management of freeways and incident management programs; city governments, which manage most of the traffic signal systems; and public transit authorities, which manage most bus and rail services. A metropolitan area is considered integrated if any two of the three major organizations employ technology to share and use transportation data to increase system capacity, as determined through a standard, objective survey |
| Source: | Metropolitan ITS Deployment Tracking Database developed by the Oak Ridge National Laboratory for the ITS Joint Program Office. Data are collected by means of surveys from designated metropolitan areas. |
| Baseline: | The FY 1997 baseline is 34 areas. |

| | |
|---|---|
| Limitations: | This is an initial indicator designed to track and encourage basic steps toward systems integration. It does not reflect the full breadth of integration activities. While it measures the existence of basic integration of essential components, it does not confirm that all possible or desirable integration links exist. The 1997 data displayed in the graph are based on actual counts from the deployment tracking surveys, with an overall response rate of 81%. However, the data would be relatively unaffected if the response rate were increased to 100%, because metropolitan areas that did not respond are generally those expected to have little or no ITS infrastructure deployed. |
| Verification & Validation | The DOT Joint Program Office reviews deployment tracking indicators and methodology. Results are distributed to DOT headquarters and field staff as well as to state and local survey responders for confirmation of accuracy and completeness before the final reports are issued. Survey construction and data collection procedures will be improved as a result of process feedback from each survey iteration. |
| Comment: | This initial indicator is meant to provide a basic, easy to understand, gauge of ITS integration. More comprehensive assessments of integration are also being conducted, and we expect to move to more advanced measures as we make progress on ITS integration. |

## Runway pavement condition **Page 35**

| **Measure:** | **Percent of runway pavement in good or fair condition** |
|---|---|
| Scope: | Paved runways at the 3,300+ airports in FAA's National Plan of Integrated Airport Systems (NPIAS) are assessed for pavement condition. The NPIAS airports include all commercial service and reliever airports and selected general aviation airports. |
| Source: | Under FAA's Airport Safety Data Program (ASDP), data are provided on all NPIAS airport runways each year under an FAA contract with the National Association of State Aviation Officials |
| Baseline: | The goal is a performance standard and is not based on a specific, historical baseline year. For reference, the FAA estimates that in 1997, 5 percent of NPIAS airport runways were "poor" and 23% "fair," with the remaining 72% "good." |
| Limitations: | FAA contracts for a visual survey of the runways to categorize their condition based on criteria developed by the FAA Office of Airports. "Good" condition means all cracks and joints are sealed; "fair" condition means there is mild surface cracking, unsealed joints, and slab edge spalling; and "poor" condition means there are large open cracks, surface and edge spalling, and vegetation growing through cracks and joints. Since the reports are based on a visual inspection, underlying drainage or strength problems are not reported. However, these problems normally create surface defects which are visible. The more detailed PCI inspections require a section by section examination of the runway rather than an overall assessment used for this performance measure. FAA has been aggregating the ADSP data from all NPIAS airports only every several years for inclusion in the NPIAS report to Congress. Trend information exists for 1993 to 1997. |
| Verification & Validation | One-half of NPIAS airports have undertaken pavement condition index (PCI) surveys, which are more stringent and reliable (but still visual) than the surveys conducted under the Airport Safety Data Program. Comparisons of PCI and ASDP data show comparable results at the system level. |
| Comment: | |

## Aviation delays — Page 36

| **Measure:** | **Air travel delays per 100,000 activities** |
|---|---|
| Scope: | An air travel delay occurs when an aircraft is delayed fifteen minutes or more because of constraints that prevent the aircraft from making a scheduled landing. Delays are counted in five categories: equipment, volume, weather, runway related, and other. Delays due to airline equipment are not considered. "Activities" are total facility activities, as defined in *Aviation System Indicators 1997 Annual Report.* Total facility activities are the sum of en route and terminal facility activities. |
| Source: | FAA air traffic facilities report the data to headquarters which incorporates the data into the Air Traffic Operations Management System |
| Baseline: | The baseline is the 5 year average for 1992-96 of 181 delays per 100,000 activities. The target level for this goal is based on a 20% reduction in volume- and equipment-related delay and approximately a 1% reduction in weather related delay, with other factors assumed constant. Weather delays vary year to year, and significantly influence the variance in overall delays. |
| Limitations: | By collecting information on delays of fifteen minutes or more, FAA does not capture the aggregate amount of system delay, but only the most significant delays. |
| Verification & Validation | Data is analyzed and checked by an Air Traffic Service headquarters office on a daily basis to ensure accuracy of the information reported. |
| Comment: | Total delays in all five categories are what the travelling public experience. |

## GPS landing approaches — Page 37

| **Measure:** | **Number of published GPS landing approaches** |
|---|---|
| Scope: | This performance measure counts the total number of GPS Landing Approaches (published), and includes both precision and non-precision approaches. |
| Source: | Internal FAA tracking spreadsheet. |
| Baseline: | 1,453 approaches have been published through 1997. |
| Limitations: | This is an output measure rather than an outcome measure. Individual use of GPS approach procedures is not tracked by current information systems. Although it may be impossible to measure the exact benefits to users, increased schedule reliability for commuters and air taxis, as well as improved access for all of general aviation will result from increasing the number of published approaches. |
| Verification & Validation | Productivity numbers are compared and validated monthly by FAA (Aviation Standards National Field Office and National Flight Data Center). |
| Comment: | FAA previously tracked procedures by calendar year but has since converted to tracking by fiscal year. In addition, FAA initially tracked procedures in accordance with the Federal Register, but is now tracking by actual publication date (i.e. when available to customers). FAA is in the process of developing an automated workflow management system to track each procedure's progress until published. |

## Essential air service — Page 38

| **Measures:** | **Essential Air Service (EAS) service frequency.** |
|---|---|
| Scope: | The measure shows the number of weekly round trips at subsidized EAS communities in the continental U.S. EAS communities are those that were on the certificated airline map in 1978. |

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|---|---|
| Source: | Air carrier filings, community and carrier notification. |
| Baseline: | The goal is a performance standard, and is not based on a specific, historical baseline year. |
| Limitations: | Service frequency is closely associated with program funding levels and the number of EAS communities that require subsidy; and the number of communities may change. Service frequency may also be affected by conditions such as an air carrier going out of business, airline strikes, or system shutdown. DOT's goal assumes a fairly constant level of communities in the base (76 in 1998). This measure will not show instances in which the Department is successfully able to effect a carrier transition to commercially viable service without a subsidy. Data has only been gathered for 1996 and later years. |
| Verification & Validation | Continued contact with civic parties, carrier officials, and Congressional staffs. |
| Comment: | Consideration of additional strategies or alternative performance measures may be prompted by the research study, "Economic Evaluation of the Impact of Air Service on Small Metropolitan and Rural Communities," to be completed in 2000, or by other developments such as the state of aircraft manufacture. |

## Maritime navigation **Page 39**

| **Measure:** | **Total number of maritime collisions, allisions, and groundings.** |
|---|---|
| Scope: | The measure includes collisions, allisions, and groundings of freight and tank ships over 500 gross tons. Intentional groundings are excluded. All U.S. and foreign ships in U.S. waters are included. |
| Source: | Ship operators, crew, and pilots report accidents directly to the Coast Guard, which records the data in the Coast Guard Marine Safety Information System (MSIS). |
| Baseline: | This is a new measure designed to gauge how well the Coast Guard prevents incidents detrimental to the efficient movement of vessels in ports and waterways. A draft goal target has been set for reduction of these types of casualties by 10% over a 5 year time frame from FY 98 to FY 03. |
| Limitations: | Future refinements may include normalizing data against the number of vessel transits. Some minor groundings may not be reported. |
| Verification & Validation | The data is validated by Coast Guard program managers, who identify and investigate errors or inconsistencies. |
| Comment: | The Coast Guard will conduct a program evaluation to determine the impact that education, regulation, inspection, aids to navigation, and rescue activities have on maritime-related fatalities, injuries, and property damage. The evaluation will allow the Coast Guard to assess the combined and disaggregated contributions of these activities, and provide information to determine the optimum mix of prevention and mitigation safety strategies. |

## Impediments to port commerce **Page 40**

| **Measure:** | **Percentage of ports reporting landside impediments to the flow of commerce through ports and terminals** |
|---|---|
| Scope: | MARAD has identified the five most significant types of impediments at 61 targeted ports (the top 50 U.S. ports, the top 25 container ports, and 13 strategic ports, with some ports in more than one category). Data are available for 58 of the 61 ports. The significant impediments are: physical infrastructure (land and waterside access); land use; institutional; regulatory; and, financial. MARAD has focused on physical impediments in FY 1999, but in FY 2000 and 2001 the agency will also compile data on land use, institutional, regulatory and financial barriers. |

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|---|---|
| Source: | 1997 Survey of top 50 ports and 13 strategic ports (to the extent they are not captured in the top 50) by the Intermodal Association of North America and the American Association of Port Authorities. This data is augmented by impediments identified, but not yet corrected, in the 1993 MARAD report *Landside Access to U.S. Ports.* |
| Baseline: | The FY 1998 baseline is 41%. |
| Limitations: | Data: The number and variety of data on impediments and intermodal projects pose a limit on MARAD's ability to collect comprehensive information in any given year. Information obtained from ports may be incomplete if ports do not want to release to the public information on impediments. This is a new measure – no historical data exists. |
| Verification & Validation | Annual updates of data will be obtained through direct contact with ports, terminals and national/regional port associations: visits by MARAD Region personnel to the ports; information from MPOs and state DOTs; improvement plans submitted under ISTEA/TEA-21. |
| Comment: | |

## St. Lawrence Seaway lock availability **Page 41**

| **Measure:** | Ratio of navigation days open to total days in shipping season. |
|---|---|
| Scope: | Includes "downtime" (delay or prohibition of transiting) for transit of the U.S. sectors of the St. Lawrence River throughout the navigation season (late March to late December). Downtime is measured in minutes/hours of delay for weather (visibility, fog, snow, ice); vessel incidents (human error, electrical and/or mechanical failure); water level and rate of flow regulation; lock equipment malfunction. |
| Source: | SLSDC gathers the data from Lock Operations Records. |
| Baseline: | The goal is a performance standard, and is not based on a specific, historical baseline year. |
| Limitations: | SLSDC reports data directly from observation. The indicator does not cover all characteristics of performance of the St. Lawrence Seaway. |
| Verification & Validation | SLSDC verifies and validates the accuracy of the data through review of 24 hour vessel traffic control computer records, radio communication between the two Seaway entities and vessel operators; and video and audio tapes of vessel incidents. |
| Comment: | SLSDC influences the measure primarily through capital planning, and consistent facilities maintenance and investment. |

## Amtrak ridership **Page 42**

| **Measure:** | **Number of passengers on Amtrak's intercity routes** |
|---|---|
| Scope: | The measure includes all revenue paying passengers on intercity routes. |
| Source: | Amtrak Annual Report. |
| Baseline: | Baseline is 20.2 million passengers in 1996. |
| Limitations: | Data collection relies on accuracy of Amtrak report. Ridership is an outcome indicator that reflects a variety of factors, not insignificantly the capital investment of the federal government. Operational decisions of Amtrak and the availability and cost of alternative modes of transportation also influence ridership. |
| Verification & Validation | Amtrak conducts monthly verification and validation of data. |

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|---|---|
| Comment: | A 3.6 million increase in ridership is projected from 1997-2001 as a result of the initiation of the Northeast Corridor high-speed rail service. |

## Transit ridership — Page 43

| **Measure:** | **Billion transit passenger miles traveled.** |
|---|---|
| Scope: | Includes revenue-passenger miles on publicly-sponsored bus, transit rail, commuter rail, ferry, and vanpools in urbanized areas. |
| Source: | National Transit Database (NTD), with information gathered from transit operators. |
| Baseline: | Baseline is 39.0 billion transit passenger-miles-traveled in FY 1996. |
| Limitations: | Data is self-reported by transit agencies using an FTA-approved sampling methodology. Although most data is reported in the National Transit Database each year, sample cycles may be annual, every three years, or every five years depending on the size of the urban area and the number of vehicles operated. Ridership is an outcome indicator that reflects a variety of factors, including the capital investment of the federal government. Ridership is also influenced by operational decisions of transit authorities and the availability and cost of alternative modes of transportation. |
| Verification & Validation | An independent auditor and the transit agency's CEO certify that data reported to the NTD are accurate. FTA also compares data to key indicators such as vehicle revenue miles, number of buses in service during peak periods, etc. |
| Comment: | |

## Bus and rail transit fleet condition — Page 44

| **Measure:** | **The average age of buses and rapid rail fleets.** |
|---|---|
| Scope: | The current measure includes only bus and rail fleets. Previous measures have included the paratransit fleet. However, because the National Transit Database does not track the age of paratransit fleets, it has been taken out of the current measure. |
| Source: | National Transit Database (NTD), with information gathered from transit operators. |
| Baseline: | ***Bus***: 8.1 years in CY 1996.<br>***Rail***: 19.3 years in CY 1995. |
| Limitations: | Age is not a direct indicator of condition, and average age may not correctly reflect the number of rail or bus fleets that are in need of replacement. Furthermore, there is a lag of approximately five years between the time of the federal government's capital investment and its effect on the average age of bus or rail fleet. For these reasons, this measure is monitored only; no goal is set. |
| Verification & Validation | An independent auditor and the transit agency's CEO certify that data reported to the NTD are accurate. Data are also compared with fleet data reported in previous years, and cross-checked with other related operating/financial data in the report. Fleet inventory is reviewed as a part of FTA's Triennial Review, and a visual inspection of fleet condition is made at that time. |
| Comment: | Other criteria are being developed and will be included in future Performance Plans. |

### Transportation accessibility Page 45

| Measure: | Percent of transit facilities and fleet that are compliant with the Americans with Disabilities Act (ADA). |
|---|---|
| Scope: | Accessibility for bus fleet means that vehicles are lift or wheel chair ramp equipped. Accessibility for key rail facilities is determined by standards for ADA compliance. |
| Source: | Data on bus accessibility is collected in the National Transit Database (NTD), with information gathered from transit operators. Data on rail accessibility is reported to FTA by the transit authorities. |
| Baseline: | Baselines are 19% of key rail stations and 63 % of the bus fleet were ADA accessible in CY 1996 |
| Limitations: | Measure does not capture ADA compliance (or transportation accessibility) for modes other than transit. |
| Verification & Validation | For bus accessibility, an independent auditor and the transit agency's CEO certify that data reported to the NTD are accurate. Data are also compared with fleet data reported in previous years, and cross-checked with other related operating/financial data in the report. Fleet inventory is reviewed as a part of FTA's Triennial Review, and a visual inspection is made at that time. FTA's Office of Civil Rights conducts oversight reviews in order to verify the information on key rail station accessibility which has been self-reported by the transit authorities. |
| Comment: | FTA will primarily influence the goal through Federal transit infrastructure investment, which speeds the rate at which transit operators can transition to ADA compliant facilities and equipment. |

# Details on DOT Measures of Economic Growth & Trade

### Appalachian highway system page 49

| Measure: | Miles completed on the Appalachian Development Highway System (ADHS). |
|---|---|
| Scope: | Measure includes actual miles completed on the 3,025 mile ADHS, within 13 member States. |
| Source: | States submit annual status updates on ADHS miles completed within their State to the Appalachian Regional Commission (ARC). The ARC compiles the data. |
| Baseline: | Baseline is 2290 miles completed to date in FY 1998. |
| Limitations: | This is an output measure. |
| Verification & Validation | Completed by ARC. |
| Comment: | ARC estimates that the TEA-21 funding level will result in completion of approximately 37 additional miles each FY 1999 through 2003. |

### Highway border crossings Page 50

| Measure: | Hours of delay per 1000 vehicles processed at NHS border crossings. |
|---|---|
| Scope: | Measure is under development. |
| Source: | FHWA |
| Baseline: | No trend information available. |
| Limitations: | No data is readily available. The Department is exploring how to best collect periodic data and |

| | |
|---|---|
| | establish targets in this area. |
| Verification & Validation | |
| Comment: | |

## Flight route flexibility — Page 51

| Measure: | Percentage of flight segments flown off ATC preferred routes |
|---|---|
| Scope: | Pilots are required to fly on ATC preferred routes unless they get specific authority to fly a direct or other route from air traffic control facilities. This authority has been dramatically expanded since 1990 and FAA has permitted as many as 75% of flight segments to select a route other than an ATC preferred route. |
| Source: | FAA Enhanced Traffic Management System. |
| Baseline: | In 1996, 75% of flights were allowed to fly off the ATC preferred routes. |
| Limitations: | The number of flight segments flown off preferred routes doesn't provide enough information to determine the economic value of this initiative. The measure also does not capture the benefits of reducing the flight miles on ATC preferred routes. |
| Verification & Validation | Air Traffic Service analyzes data collected by Volpe National Transportation Systems Center for air traffic facilities. |
| Comment: | |

## International air service — Page 52

| Measure: | Growth in the number of passengers traveling between the United States and open-skies aviation partners, plus Canada, and flowing to and from points beyond those countries. |
|---|---|
| Scope: | These data are collected by DOT for all flight segments to/from a U.S. point. The data for this measure include all passengers on U.S. and foreign carrier flights to and from 31 "open-skies" countries and Canada. This indicator reflects (barring significant, unrelated macroeconomic and political influences) the extent to which the competitive environment promoted by DOT increases travel opportunities. |
| Source: | Domestic air carrier data comes from the T-100 international non-stop segment data base. U.S. air carriers file domestic data as well as foreign flight segments in this system. Foreign carrier data are from the T-100F database. Foreign air carriers file data for all nonstop flight segments involving a U.S. point. |
| Baseline: | The FY 1997 baseline is 40.9 million passengers. |
| Limitations: | These data are considered a reliable measure of airline passenger traffic between the U.S. and foreign nations. The annual increase in air traffic, however, is affected by economic strength as well as market liberalization in bilateral aviation trade agreements. Furthermore, only part of the growth rate in open skies markets can be attributed to new traffic – a large part may be to the diversion of traffic from other routes. The goal of 3% annual growth reflects aviation analysts' judgment of the net impact of these agreements above the estimated growth expected in the industry. For these reasons, this measure must be considered more of a forecast than a "target", and program effectiveness will be assessed in greater detail both in the narrative of the annual performance report and in program evaluations (one is slated in 2000). |
| Verification & Validation | Airlines are required to certify that these data are accurate. Also, these data are a 100% enumeration of traffic and capacity and can be verified for reasonableness against other data bases, such as flight schedules. |

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|---|---|
| Comment: | U.S. policy has favored the linking of networks. Networks allow improved service and marketing in many thousands of small city-pair markets. All of this traffic flows over flights captured by the T-100 reports for international flights. |

## Great Lakes winter navigation — Page 53

| **Measure:** | **Number of days critical waterways are closed due to ice.** |
|---|---|
| Scope: | 7 waterways are designated critical to icebreaking on the Great Lakes based on historical ice conditions, volume of traffic, and potential for flooding due to ice dams on rivers. Winter conditions are defined by a standard severity index (-6.2 or milder defines average severity; more than –6.2 defines severe). The measure is the number of days critical waterways are closed for more than 24 hours due to ice. |
| Source: | Data comes from U.S. Coast Guard and U.S. Army Corps of Engineers observations. Waterways closure data is reported to the Ninth Coast Guard District by operating units via operational situation reports. |
| Baseline: | The goal is a performance standard, and is not based on a specific, historical baseline year. For reference, 1996 was a severe winter and had 7 days closed on the waterways. |
| Limitations: | Measure captures only Great Lakes winter navigation, and not all domestic icebreaking. |
| Verification & Validation | USCG district program managers review and validate data from situation reports and provide Coast Guard headquarters with an End of Season report. |
| Comment: | Great Lakes data reflect initial measurement methodology. Further refinements are being explored that will make this measure a more comprehensive gauge of winter navigation. |

## Commercial shipbuilding — Page 54

| **Measure:** | **Gross tons (GT) of commercial vessels under construction in U.S. shipyards.** |
|---|---|
| Scope: | Includes all commercial vessels over 1,000 gross tons and above, excludes smaller commercial vessels built in the United States. |
| Source: | Maritime Guaranteed Loan (Title XI) applications; Lloyd's Ship Particulars File, as modified by MARAD's semi-annual survey of the top 75 U.S. shipbuilding companies (represent 90 percent of all shipyard employment). |
| Baseline: | The FY 1997 baseline is 567,000 gross tons. |
| Limitations: | MARAD does not have a complete time series of the commercial orderbook. Historical orderbook data available to MARAD only include vessels 1,000 GT and above; this excludes smaller commercial vessels built in the United States. Orders for smaller vessels represent a significant amount of activity in U. S. shipyards. Future shipbuilding data will include vessels 300 GT and above. |
| Verification & Validation | MARAD periodically has found inaccuracies in data from Lloyds' Particular File. MARAD believes that the survey data from 75 commercial shipbuilders proves an accurate representation of the status of shipbuilding industry and related construction activity. MARAD plans to follow up with shipyards by telephone and other electronic means to clarify and/verify certain responses to MARAD's surveys. Currently, MARAD has no plans to undertake on-site verification or in-depth independent research. |
| Comment: | Full-year FY 1998 survey data submitted by shipyards is expected to be available by April 1999. MARAD has collected the survey information and is currently performing verification and analysis of the raw data. |

## Access to jobs **Page 55**

| **Measure:** | **The number of employment sites that are made accessible by Job Access and Reverse Commute transportation services.** |
|---|---|
| Scope: | This measure assesses one part of the Job Access and Reverse Commute program – the number of employment sites made accessible that were not previously accessible. An employment site is considered accessible if located within ½ mile of services provided by the grantee. Employment sites must offer jobs that require a high school diploma or less. Services that make an employment site accessible may include, but are not limited to, carpools, vanpools, and demand-responsive services as well as traditional bus and rail public transit. The measure cannot account for those Job Access and Reverse Commute activities that encourage riders to use already existing sources of public transit. See comments. |
| Source: | Data are provided to FTA by grantees of the Job Access and Reverse Commute program on a regular basis. |
| Baseline: | To be developed in FY 1999. |
| Limitations: | The goal and measurement is a preliminary effort at capturing results of the Job Access and Reverse Commute program. Three elements are key to job access – the residence of the employee, the commute, and the job location. This measure includes the "goal" of the commute and the job, but it does not include the "starting line" of the commute, the rider's home. Although jobs may be made more accessible to transportation services, these services may not provide access to potential workers' communities. This measure also cannot account for improved accessibility due to lower fares or shorter commute times – it only addresses the gap in service delivery. FTA requires a greater level of precision from larger, urban grantees than rural grantees that may have fewer resources at their disposal. |
| Verification & Validation | FTA approves the local methodologies for collecting this data, ensuring that the data is consistent and comparable. |
| Comment: | This goal and its measurement will have to be revisited and revised as the Department gains more experience with the program. Job access programs are difficult to measure, as there are very different obstacles to overcome. Services can make employment sites accessible by closing a spatial gap, reaching new geographic locations. They can also close a temporal gap, providing services at a time when other services are not offered. Because this program works with nontraditional projects and grantees, in can include a great variety of transportation services. |

## Transportation and education **Page 56**

| **Measure:** | **Graduate degrees issued by DOT funded education programs.** |
|---|---|
| Scope: | University Transportation Center (UTC) data includes recipients of Masters and Ph.D. degrees in programs considered to be transportation related. |
| Source: | UTC data to be derived from university records provided to RSPA as part of the UTCs' grant application. |
| Baseline: | Historic data does not exist for UTC grantees. |
| Limitations: | No data currently exists for the UTC program or for other education programs that can result in graduate degrees. |
| Verification & Validation | Comparison with data reported for all degree programs by host universities and specific reports on each recipient of an advanced degree. |
| Comment: | Data will be developed. |

### Disadvantaged and women-owned business contracting — Page 57

| **Measure:** | **The dollar value of DOT direct contracts awarded to small disadvantaged and women owned businesses.** |
|---|---|
| Scope: | Includes contracts awarded by DOT through direct procurement (i.e., not including contracts issued by grantees) |
| Source: | Data from the Contract Information System (CIS) as reported by all DOT contracting activities to the Federal Procurement Data Center (FPDC). |
| Baseline: | The goal represents a desired level of contracting, but is not a target based on a specific, historical baseline year. |
| Limitations: | Contracting data is reported by procurement office directly into the CIS. |
| Verification & Validation | SBA conducts verification and validation of data by comparing annual reports submitted by DOT against FPDC data. |
| Comment: | As a result of the Adarand Supreme Court case, the direct contracting and DOT regulations affecting affirmative action programs have been revised. This may significantly alter small disadvantaged and women owned businesses ability to participate in federal contracting. The changes taking place in FY 1999 and beyond may reduce the participation levels and the goal may have to be adjusted. |

# Details on DOT Measures of Human & Natural Environment

### Mobile source emissions — Page 61

| **Measure:** | **Mobile source emissions in short tons.** |
|---|---|
| Scope: | Figure is the sum of on-road mobile source emissions of carbon monoxide, hydrocarbons, nitrogen oxides, and particulate matter less than 10 microns in diameter (PM-10). |
| Source: | National Air Quality and Emissions Trends Report published annually by EPA. (EPA uses data from FHWA's Highway Performance Monitoring System – HPMS.) |
| Baseline: | The 1996 baseline is 65.9 million tons. |
| Limitations: | Pollutant data is measured directly, but on-road mobile source component is modeled using vehicle data. Past data contains some variations due to changes in how the mobile source portion of pollutants are estimated. Emissions data are reported in a 2-year time lag. Indicator captures all major mobile source emissions from on-road vehicles. It does not capture off-road mobile sources, such as agriculture and construction machinery, lawn mowers, aircraft, trains, and boats. |
| Verification & Validation | EPA conducts verification and validation of data. FHWA field offices perform annual reviews of HPMS data that EPA uses as a part of its model. |
| Comment: | Revised National Ambient Air Quality Standards will begin to phase in during FY 2000, so goal may need to be modified. |

### Greenhouse gas emissions — Page 62

| **Measure:** | **Greenhouse gas (GHG) emissions from transportation sources, in million metric tons.** |
|---|---|
| Scope: | Measure includes GHGs that will be subject to the Kyoto Protocol,, if ratified by the Senate (e.g., $CO_2$, $CH_4$), but not other GHGs (e.g., water vapor). Includes emissions from international travel and shipping to and from the U.S., but not from that between other countries. Does not include emissions from non-transportation mobile sources such as farm and construction equipment. |

| | |
|---|---|
| Source: | *Inventory of U.S. Greenhouse Gas Emissions and Sinks*, published by EPA. Estimates are based on data from EPA, DOE, and other agencies. |
| Baseline: | 6+ years of trend information available. |
| Limitations: | GHG emissions are estimated based on DOE estimates of aggregate supply of energy products such as motor gasoline and distillate fuel oil. Further disaggregation (e.g, of transportation modes and other uses such as agriculture) is not always available. Related "upstream" emissions and sequestration (e.g., from petroleum refining) are in separate categories. Procedures for calculating and applying GHG credits and permits have not yet been established. |
| Verification & Validation | EPA and DOE conduct verification and validation of data. DOT will participate as appropriate in reviewing data, methodology, and results. |
| Comment: | If entered into force, the Kyoto Protocol ("the Protocol") to the United Nations Framework Convention on Climate Change (UNFCCC) would establish a binding limit on aggregate U.S. emissions of six GHGs during 2008-2012, but would not establish any sector-specific limits. However, the Protocol would defer to the International Maritime Organization (IMO) and the International Civil Aviation Organization (ICAO) for the development of guidelines for reducing emissions associated with combustion of marine and aviation bunker fuels, respectively. The Protocol would provide for the transfer of emissions credits and/or permits between sectors and countries, but would require further development of accounting and other procedures. Pending the establishment of a national goal for greenhouse emission, DOT will monitor this measure only. |

## Energy Efficiency — Page 63

| **Measure:** | **Transportation Petroleum Consumption as a function of real GDP** |
|---|---|
| Scope: | Measure includes primary consumption of petroleum for transportation, in quadrillion BTUs. This does not account for petroleum-produced electricity that is used in transportation; however, this is less than 1% of petroleum use. Petroleum use is normalized to real GDP, in constant 1992 dollars. |
| Source: | U.S. Department of Energy *Annual Energy Review.* Real GDP taken from *Economic Report of the President, February 1998.* |
| Baseline: | 1990-1996 data available. |
| Limitations: | Energy consumption does not include petroleum-produced transportation electricity. Measure does not capture the fraction of this petroleum use that is imported, nor does it capture actual energy efficiency (BTUs per passenger-mile-traveled). |
| Verification & Validation | Data is taken from external sources, who conduct their own verification and validation. |
| Comment: | Petroleum use is normalized to the nation's real GDP in order to capture the nation's economic exposure to petroleum use in transportation. When transportation petroleum use is normalized to passenger-miles-traveled, the trend is upwards – energy use per passenger is becoming less efficient. No goal has been set for transportation energy use per real GDP at this time, pending further study and consultation with DOE. |

## Wetland protection and recovery — Page 64

| **Measure:** | **Ratio of Wetland replacement resulting from Federal-aid highway projects** |
|---|---|
| Scope: | Measure includes wetlands associated with all Federal-aid highway projects each fiscal year. To be included, wetland replacement (or investment in a wetland bank) must have begun. |

| | |
|---|---|
| Source: | State DOTs input Federal-aid related wetland degradation and replacement data into either a locally developed wetland mitigation databases or the FHWA Wetlands Management Database. FHWA compiles the final data. |
| Baseline: | The goal is a performance standard and is not based on a specific, historical baseline year. For reference, the FY 1996 recovery ratio was 2.3:1. |
| Limitations: | Data only exists on Federal-aid related wetland replacement. Also, uniformity of the data is not guaranteed, as it is subject to interpretation by the reporting State DOTs. In particular, there is no uniform understanding of what should be reported as mitigation acreage. The FHWA has provided guidance on mitigation activities to report and will soon issue the Wetlands Management Database that should reduce the current variations in data received from the States. Data on wetland replacement is available for the past three fiscal years. |
| Verification & Validation | Data is gathered from established mitigation amounts required by section 404 permits that states must acquire for their projects. In addition, FHWA provides guidance to help states consistently report mitigation data. This process will be further improved through a standard mitigation database under development for the states. At present, there is no external audit of state data. |
| Comment: | All Federal agencies (including DOT, FHWA, and other modes) must comply with National Environmental Policy Act (NEPA) and the Clean Water Act (specifically section 404(b)(1) of the CWA) regarding disruption of wetlands. These laws require agencies to identify project alternatives that would avoid or minimize impacts to wetlands as a first consideration. These alternatives are subjected to analysis under both NEPA and the Clean Water Act. Under the law, these alternatives must be chosen unless the project sponsors clearly demonstrate that they are not viable because they do not meet the project purpose and need or will lead to other more significant environmental impacts. If, in compliance with the law, wetland disruption is unavoidable, FHWA then works to achieve this goal of wetland replacement. |

## Livable communities (transit service) **Page 65**

| **Measure:** | **The percentage of people who live within a quarter mile of transit stops with service frequency of 15 minutes or less (mid-day, non-rush-hour).** |
|---|---|
| Scope: | A transit stop is defined as a bus stop, but does not include rail stations unless associated with a bus stop. |
| Source: | FTA compiled information from bus schedules across the country. Population statistics come from the Census Bureau. Information from both of these sources was formatted using the Geographic Information System. |
| Baseline: | Baseline is 11.22% in 1996. |
| Limitations: | Transit stops do not include rail stations (such as light rail or subway). However, rail stations are almost always served by bus lines, so most persons who live near a rail station also live near a bus line. |
| Verification & Validation | Under development. |
| Comment: | The Federal Transit Administration is working to develop the Transit Performance Monitoring System. Fully instituted, the TPMS will allow the Department to measure not only how many people live close to public transit, but also how many people use public transit for basic mobility. |

## Aircraft noise exposure

Page 66

| Measure: | Estimated population exposed to aircraft noise over DNL 65 dB. |
|---|---|
| Scope: | Residential population exposed to aircraft noise above Day-Night Average Sound Level of 65 decibels around the 250 U.S. airports with the greatest number of commercial jet take-offs and landings. |
| Source: | A statistical modeling technique (Nationwide Airport Noise Impact Model, or NANIM) is applied using the 250 largest civil airports with jet operations in the U.S. Flight activity forecasts, commercial fleet mix and population projections are developed from the Terminal Area Forecast (TAF) and Metropolitan Statistical Area (MSA) population forecasts. 1990 census data are subjected to multiple source updates as part of an international study application. FAA's Part 91 database supplies the number of hushkitted and re-engined Stage 2 aircraft. Noise contour information is derived from the FAA Integrated Noise Model (INM) and generic procedures used in the FAA Area Equivalent Method (AEM). |
| Baseline: | Baseline is 1.7 million people in 1995. |
| Limitations: | No actual count is made of the number of people exposed to aircraft noise. No military or general aviation aircraft are included in the FAA's model. |
| Verification & Validation | The Integrated Noise Model has been validated with actual acoustic measurements at both airports and other environments such as areas under aircraft at altitude. External forecast data are from primary sources. |
| Comment: | |

## Maritime Oil Spills

Page 67

| Measure: | Gallons spilled per million gallons shipped |
|---|---|
| Scope: | Spills from regulated vessels and waterfront facilities are counted; other spills are not. Oil spills of 1 million gallons or more are excluded from data since they are rare (they do not occur every year) and would have an inordinate influence on statistical trends. The 1 million gallon threshold is the same as that used in the National Contingency Plan for defining major oil spills in coastal waters. |
| Source: | Data on oil spills from USCG Marine Safety Information System. Spills are initially reported to the Coast Guard National Response Center by the spiller or, in some cases, by third parties. Data on waterborne oil shipments from US Army Corps of Engineers "Waterborne Commerce Statistics". |
| Baseline: | FY 1998 statistical baseline of 5.25 gallons spilled per million gallons shipped is derived from an exponential regression using several years of data. This regression allows managers to consider year to year variance as they establish program goals. By comparison, a single year data point for 1996 was 6.66. |
| Limitations: | The amount of oil spilled may be underreported, since it often comes from the spiller, and cannot always be verified precisely. By excluding non-regulated sources and major oil spills, the measure does not capture the entire amount spilled. The measure is more meaningful for program management, but may under represent total oil spilled. |
| Verification & Validation | USCG program managers validate data by conducting an 80% sample of the compiled annual data. For the sample of individual cases, the spill volume data field is crosschecked against the narrative data field for consistency. Cross checks are further conducted against information from professional journals, news articles, etc. |
| Comment: | |

## Fisheries protection — Page 68

| **Measure:** | **Number of endangered or threatened fish species that are improving in status** |
|---|---|
| Scope: | Endangered or threatened fish species are listed by the Department of the Interior. Improvement in the status of these species is based on whether the absolute number of fish is increasing. The NMFS annually monitors the state of the various living marine species through scientific measures. These scientific measures are currently under revision by NMFS. |
| Source: | External: National Marine Fisheries Service. The data for listed species, and the changes in the number of listed species that improve in status from year to year, will be provided by NMFS through each of the Regional Fisheries Management Councils. |
| Baseline: | The number of species that were improving in 1997 was 12. |
| Limitations: | Historical data is limited. NMFS has been charged by the Congress to improve its data collection system, and is in the process of doing so. The NMFS database could be improved substantially by FY 2000. The methods for counting are also subject to some degree of estimating error, which is difficult to quantify. |
| Verification & Validation: | Data are provided by NMFS. DOT does not independently verify or validate the data. |
| Comment: | This measure represents the outcome DOT strives to influence, but does not measure the effectiveness of Coast Guard enforcement and compliance programs. The Coast Guard is working with NMFS to develop program measures for enforcement and compliance. |

## Pipeline spills — Page 69

| **Measure:** | **Tons of hazardous liquid materials released per million ton-miles shipped** |
|---|---|
| Scope: | Hazardous liquid pipeline incidents are those that result in a fatality or injury resulting in hospital treatment or hospitalization property damage equal to or greater than $50,000, or over 50 barrels spilled. This measure tracks only releases from hazardous liquid pipelines to the environment. Natural gas pipeline releases vaporize into the atmosphere and do not have long-term significant impact on the environment, and thus are not included in this measure. |
| Source: | Pipeline operators report to RSPA on form 7000-1, Hazardous Liquid Accident Report. RSPA records the data in RSPA's Hazardous Materials Information System. |
| Baseline: | Baseline is 0.98 in 1994. |
| Limitations: | Because of the magnitude and frequency of fluctuations in the historical data for this measure, a short-term goal will be of limited use in tracking program performance. RSPA does not collect volume shipped data but uses the Association of Oil Pipelines annual Fact Sheet as source for this part of the measure. |
| Verification & Validation | RSPA reviews the data for accuracy. Supplemental reports are requested where obvious reporting shortcomings are indicated. Additionally, the ASME B31.4 liquid pipeline data review subcommittee performs an annual examination of the hazardous liquid incident reports. Known problems with under-reporting property damages and spill quantities are being addressed by a new industry data improvement effort being piloted in 1999 that will provide better precursor data and more extensive data about impacts to the environment of hazardous liquid pipeline spills. |
| Comment: | The data for this measure fluctuate year to year. FSPA is studying the sill data to determine the nature of this fluctuation and improve this measure. |

## DOT facility cleanup — Page 70

| **Measure:** | **Percent of DOT superfund Facilities with No Further Remedial Action Planned.** |
|---|---|
| **Scope:** | EPA maintains a Federal Facility Hazardous Waste docket (docket), which contains information regarding Federal facilities that manage hazardous wastes or from which hazardous substances have been or may be released. DOT facilities listed on the docket are discussed in the Annual SARA report sent to Congress each year. EPA regional offices make the determination to change facility status to NFRAPs on the docket. |
| Source: | Annual SARA Report to Congress. |
| Baseline: | 75% of the facilities listed were categorized as NFRAP in FY 1996. |
| Limitations: | The number of DOT facilities listed on the docket can and has fluctuated over the years. Several of the DOT facilities listed have more than one site requiring cleanup and a facility is not removed from the list until all of the sites have no further remedial action planned. Some facilities are listed erroneously and it may take several years to remove them from the docket. NFRAP decisions may be reversed by EPA if future information reveals that additional remedial actions are warranted. |
| Verification & Validation | The data used in measuring this performance is based on restoration activities at field locations for USCG, FAA, FHWA, and FRA. These field sites report their activities to their respective headquarters management who verifies the data by periodic follow-up reviews. The data is then reported yearly to the Office of the Secretary, who crosschecks it against data received from EPA and the states. |
| Comment: | The primary criterion for NFRAP is a determination that the facility does not pose a significant threat to the public health or environment. NFRAP decisions may be reversed if future information reveals that additional remedial actions are warranted. The Operating Administrations' activities are controlled, to a degree, by interaction and decisions made by EPA Regional personnel. |

## Environmental Justice — Page 71

| **Measure:** | **Number of environmental justice complaint cases that remain unresolved after one year.** |
|---|---|
| Scope: | Data will cover complaints filed with DOT under Title VI of the Civil Rights Act of 1964 and which have had environment justice elements, such as allegations of substantially adverse environmental or health impact on a community by a transportation project. Case resolutions are actions which end or administratively close out complaints. These include such actions as withdrawals by complainants, resolutions achieved thorough alternative dispute resolution, findings of no violation, and negotiated settlements after discrimination findings under Title VI. |
| Source: | DOT will collect this data through the External Complaint Tracking System (XTRAK), which is in the debugging and testing stages. |
| Baseline: | While XTRAK is still in development, DOT has established an FY 1998 initial measure of year-by-year case age and the number of cases that remain open for more than one year. This baseline will be adjusted as the data system is implemented and further refined. |
| Limitations: | This measure is an initial indicator of how well DOT's processes EJ complaints. We anticipate that the number of EJ complaints will be relatively low, compared to other civil rights external complaints. Variables which will not necessarily be assessed include such factors as magnitude of injury, number of beneficiaries adversely affected, pervasiveness, and time constraints before irreparable damage occurs. Other statutory requirements exist for NEPA concerns. |
| Verification & Validation: | Data will cover the entire universe of complaints received by DOT, will be entered into the system by Operating Administration and DOT Office of Civil Rights staff. |
| Comment: | This indicator does not measure the impact of DOT's efforts to prevent the conditions that give |

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| | rise to complaints. It does provide an initial measure of timeliness of response, which is important to the public. All environmental justice cases by definition relate to the concerns of a community of low income and/or minority people. In addition, the number of cases gives some indication of pervasiveness of community perception of significantly adverse environmental and health concerns. |

# Details on DOT Measures of National Security

## Aviation security

Page 75

| **Measure:** | **Detection Rate of simulated, improvised explosive devices and weapons** |
|---|---|
| Scope: | Automated threat-image projection (TIP) and FAA field agent testing of aviation security screener proficiency to detect and resolve images or FAA test objects that simulate deadly or dangerous weapons or explosive devices in checked or carry-on baggage or carried on the person through an airport security checkpoint. |
| Source: | FAA Office of Aviation Security Airport and Air Carriers Information Reporting System (AAIRS) |
| Baseline: | One year of available data. FAA began deployment of TIP and refined field agent testing to be more realistic in 1998. |
| Limitations: | Automated testing is for checked and carry-on baggage only. Field agent testing at walk-through-metal-detectors is limited to weapons. |
| Verification & Validation | Special "red team" testing led by agents based at FAA headquarters are used to validate automated and field agents' test results. |
| Comment: | The White House Commission recommended more aggressive, realistic testing. Funding that began in 1997 enabled an increase in testing as more field agents were hired and trained. Prior to 1998, data from realistic testing was too sparse to be considered conclusive. |

## Critical infrastructure protection

Page 76

| **Measure:** | **Percent of threat alerts received within 24 hours.** |
|---|---|
| Scope: | Threat information, in this context, is defined as credible information (both time-sensitive/action-oriented and informational) received by the Intelligence Community, analyzed by OIS and distributed in the form of an intelligence circular, generated by OIS for distribution by the Operating Administrations (OAs). Figure is derived from the percentage of transportation security officials and industry representatives that receive threat information from OIS through the OAs within the 24-hour period. Security representatives and officials will be randomly sampled by OIS within 48 hours of information dissemination and asked if and how soon they received the subject material. |
| Source: | Internally prepared. Survey conducted by OIS of both DOT personnel and industry security contacts. |
| Baseline: | Baseline will be developed in FY 1999. |
| Limitations: | Data: Relies on the reporting of the customers and consumers of this information. Reporting could be skewed to reflect positively on the dissemination process within the Operating Administrations.<br><br>Indicator: This measure only identifies whether there are possible breakdowns and bottlenecks in the dissemination process. It does not identify where those breakdowns specifically may be in the dissemination chain. |
| Verification & Validation | Customers will be randomly surveyed at all levels within the dissemination process, not solely the end users. Consequently, the reporting of dissemination times and officials who are in receipt of the information can be cross-checked for verification and validity of data. |

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| Comment: | This goal only addresses one aspect of the critical infrastructure protection requirements for DOT. Additionally, the dissemination process is expected to level off with a low dissemination time within 3 years. This goal will, therefore, be replaced or joined by additional goals that address other aspects of critical infrastructure protection. |

## Sealift capacity — Page 77

| **Measure:** | **Twenty-foot Equivalent Units (TEUs) or square feet of sealift capacity.** |
|---|---|
| Scope: | This includes the aggregate TEUs and square feet of cargo capacity for ships enrolled in the Maritime Security Program (MSP) and Voluntary Sealift Agreement (VISA). |
| Source: | MARAD/USTRANSCOM database of militarily useful sealift capacity enrolled in the MSP and VISA programs based on DOD, DOT and industry data. |
| Baseline | The FY 1997 baselines are 124,000 TEU and 12.3 million square feet. |
| Limitations: | MARAD, DOD and operator data on vessel characteristics (e.g., deck strength in pounds per square feet, deck height, container stowage factors), which are used to determine the portion of a vessel suitable for carrying military cargo, are not always consistent. Historical data prior to FY 1997 are unavailable since the MSP and VISA programs were not enacted until that year. Ship capacity is a static measure and does not indicate actual delivery capability. Data are available for 1997 and later years. |
| Verification & Validation | MARAD has detected inconsistencies in the data on vessel characteristics, and works with DOD and the maritime industry to use the most accurate information. MARAD validates carrier data through comparisons with internationally recognized databases of vessel characteristics (such as Lloyd's Register data), vessel trim and stability information, stowage plans and other cargo loading documents. |
| Comment: | |

## Mariner availability — Page 78

| **Measure:** | **Percentage of mariners available compared to mariners needed to crew combined sealift and commercial fleets during national emergencies.** |
|---|---|
| Scope: | Mariner availability during a national emergency includes those who actually sailed in a given year, unlicensed seafarers who are not sailing but are registered with the unions as being available, plus an estimated 10 percent of the non-sailing licensed workforce. The 1999 and 2000 targets are based on a sealift operation that extends beyond 6-months, necessitating relief for the mariners who were sailing at the start-up of the operation. |
| Source: | Internally prepared: MARAD (crew requirements for the commercial fleet and government-owned organic sealift); Coast Guard (mariners who have sailed on other commercial vessels). |
| Baseline: | The goal is a performance standard and is not based on a specific, historical baseline year. |
| Limitations: | The 10 percent of the non-sailing licensed workforce assumed available during a national emergency is an estimate. *Indicator:* The requirement is based on planning factors of 1.75:1 mariners-per-billet for vessels in the commercial fleet and 1.5:1 for the DOD organic sealift fleet. Data is available for 1992 and later years. |
| Verification & Validation | MARAD intends to verify the number of mariners available by comparing crewing data reported to the U.S. Coast Guard against data provided by the maritime unions. The unions have agreed to provide such data. |
| Comment: | 1992 through 1997 data were generated by extracting the number of individuals who actually sailed during the most recently reported two-year period from crewing data supplied by the U.S. Coast |

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|---|---|
| | Guard. Adjustments were then made to reflect changes in the U.S.-flag fleet and to maintain the current mariner-to-billet ratio. |

## DOD-designated port facilities Page 79

| **Measure:** | **Percentage of DOD designated primary or alternate port facilities that are available when requested by DOD.** |
|---|---|
| Scope: | The performance measure covers all strategic port facilities identified by DOD to meet their anticipated mobilization requirements. It also represents a monthly affirmation of availability by each port facility based upon DOD and MARAD criteria. |
| Source: | MARAD data derived from semi-annual port visits, monthly reports submitted by the strategic ports, and evaluations of port readiness exercises. |
| Baseline: | The goal is a performance standard and is not based on a specific, historical baseline year. |
| Limitations: | MARAD conducts a monthly survey of all strategic facilities to determine whether they meet the DOD availability requirement. This information is provided to MARAD as a self-assessment by the port agency that owns the facility. This is some degree of subjectivity in determining the availability. As part of the overall planning process, Federal agencies (MARAD and DOD) conduct semiannual visits to independently verify and reassess port capability and availability. The indicator is by definition a point-in-time judgment. Availability could change dramatically in intervening periods between the monthly assessments. Data is available for 1995 and later years. |
| Verification & Validation | MARAD verifies data through periodic port visits. MARAD and other partner agencies in the National Port Readiness Network (NPRN) will continue to test readiness through strategic port planning exercises. |
| Comment: | |

## Ready Reserve Force (RRF) activation Page 80

| **Measure:** | **Percentage of Ready Reserve Force no-notice activations which meet (1) assigned readiness activation times; and (2) percentage of days that each ship is mission-capable while under DOD control.** |
|---|---|
| Scope: | Once a ship is activated and tendered to the Military Sealift command, it is counted as being mission-capable provided it satisfies the military operational requirements for the specified mission. Activated ships are excluded for the time period that they fail to meet the requirement. |
| Source: | MARAD records of the number of days to activate RRF ships and their operational reliability. |
| Baseline: | The goals are performance standards and are not based on a specific, historical baseline year. |
| Limitations: | No data available for FY 1988 because there were no RRF activations in FY 1988. MARAD started collecting operational reliability data in FY 1994, when the Army's Warfighting Reserve (AWR-3) program became operational. FY 1994-1996 operational reliability data include only the 8 vessels in the Army Prepositioning Stock (APS) program. FY 1997-1998 data based upon all operational RRF ships. |
| Verification & Validation | Readiness activation time data is collected into the "RRF Activation History" database. The data is verified by obtaining copies of official DOD messages originated by the MSC Surge Representatives responsible for the RRF ships undergoing "no-notice" testing. "Percent of mission-capable days" (i.e. reliability) data is collected into the Casualty Report (CASREP) system and entered into the Maintenance and Repair Tracking System. This data is verified by obtaining copies of DOD messages containing CASREPs from the Masters of RRF ships (or their operational commanders) to MSC or USTRANSCOM. |

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| Comment: | The RRF is funded by the Department of the Navy through the National Defense Sealift Fund. |

## Military Readiness (USCG) Page 81

| **Measure:** | **Readiness index for high and medium endurance cutters, patrol boats, and Port Security Units** |
|---|---|
| Scope: | All Coast Guard high and medium endurance cutters, patrol boats, and Port Security Units are evaluated. Readiness ratings use standard Department of Defense methods to objectively assess training levels, supply systems, personnel levels, equipment condition, and other factors. Samples of the readiness ratings of units compiled over the year and used to represent an annualized index score. See comments. |
| Source: | DOD Status of Readiness and Training System (SORTS) – Database used by the Coast Guard in applying DOD standards to its assets determine a readiness score. |
| Baseline: | Baseline is an index of 57 in 1997. |
| Limitations: | Current sampling may not accurately depict annual readiness levels. Methodologies for better annualizing the average rating are being developed, and may involve more extensive sampling to better represent the rating. |
| Verification & Validation | Units self assess and report readiness using objective standards. Unit readiness is periodically validated through inspections, assistance visits, and in some cases training and assessment at Navy facilities. These assessments are conducted by external, field level commands (such as Coast Guard areas, districts, and groups). |
| Comment: | The readiness rating is determined by a multi-factor matrix that calculates an overall readiness value: C1 is the highest rating, C5 the lowest. These standard, DOD ratings describe the military readiness of a unit "at a point in time." The Coast Guard readiness index is calculated by determining the percentage of units that achieve an average rating of C2 when they are required to be underway or in an on-call status (during planned maintenance periods, units are deliberately placed in a lower readiness status). These percentages are then weighted (0.25 each for high endurance cutters, 0.25 for medium endurance cutters, 0.25 for patrol boats, and 0.25 for PSUs) to arrive at an aggregated index score. The target of 72 accounts for a percentage of new Port Security Units that will not achieve full readiness in 2000. |

## Drug interdiction Page 82

| **Measure:** | **Tons of cocaine seized per estimated tons shipped** |
|---|---|
| Scope: | Seizure rate is a new measure, consisting of the amount of cocaine seized by the Coast Guard over noncommercial maritime routes, expressed as a percentage of the estimated amount shipped through those routes. |
| Source: | The amount shipped through non-commercial maritime routes is estimated in the Interagency Assessment of Cocaine Movement (IACM) published by ONDCP. The amount of cocaine seized is measured by Coast Guard crews and reported through the Coast Guard Law Enforcement Information system. |
| Baseline: | The baseline is a 1995-1997 average seizure rate of 8.7%. |
| Limitations: | This measure only addresses cocaine. Amount shipped is subject to estimating error. Measure does not include drugs that enter by commercial routes. |
| Verification & Validation | Amount seized is a direct measure. Amount shipped is from an external source. |
| Comment: | This measure was developed for FY 2000 to match ONDCP measures of seizure rate. The datum of 11.9% for 1998 is preliminary. IACM final numbers should be available by March 1999. |

## Migrant interdiction **Page 83**

| **Measure:** | **Migrant Interdiction: Success Rate for Undocumented Migrants Attempting to Enter the U.S.** |
|---|---|
| Scope: | Measure includes Cuban, Dominican, Haitian, and Chinese migrants, as these are the primary groups using maritime channels. Success rate is the estimated number arriving by maritime channels divided by those that pose a threat of migration (actual interdictions plus estimated intent). |
| Source: | Data is obtained from Coast Guard and from the Immigration and Naturalization Service (INS). Actual interdiction numbers come from direct counts by Coast Guard, U.S. Border Patrol, and other official sources. Estimates of migrants who successfully arrive and estimates of those with a high potential for undertaking the voyage are derived (with a consistent methodology) from investigations of incidents, interviews of detainees, and intelligence gathering. Sources for this information are the Coast Guard, INS, and other authorities. |
| Baseline: | The Coast Guard uses a statistical trendline to establish the baseline for its goal. For reference, actual success rate was 23% in 1995. |
| Limitations: | The numbers of illegal migrants entering the U.S., and the numbers of potential migrants, are derived numbers subject to estimating error. The measure only tracks four migrant groups at this time. Using the number of potential migrants in the denominator helps address the deterrence value of Coast Guard operations, but could lead to confusion of this measure with a simple interdiction rate. Trend information for 1995-1998 is available. |
| Verification & Validation | The numbers of migrants reaching the U.S. via maritime routes and the number of "potential" migrants" are estimated. Methodologies and data are continuously reviewed. The Coast Guard has developed the estimation techniques that support this indicator over the last five years in order to more consistently use intelligence information. They are seeking independent assessment of the methods, and look to improve the process in the future. |
| Comment: | Partly because maritime threats of illegal migration have come from a limited number of sources, the Coast Guard and others have developed quantified threat estimates to better manage interdiction. Over the past five years, estimates have been formalized in a process that removes as much subjectivity and inconsistency as possible. It should be noted that past information reflects the success of intentional illegal activity. In contrast to some DOT measures, future program outcomes can not be confidently projected from measures of the immediate past. |

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